

# STUDIO LIGHT

A MAGAZINE OF INFORMATION  
FOR THE PROFESSION



PUBLISHED BY THE  
EASTMAN KODAK COMPANY  
ROCHESTER NEW YORK



SEPTEMBER 1918

# SEED

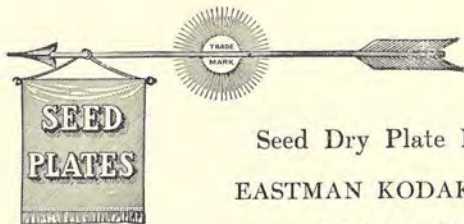


# PLATES

Seed—a quality maintained with consistent uniformity through all the seasons.

The speed, latitude, gradation and fineness of grain of the Seed 30 Gilt Edge make it the ideal plate for portraiture.

*It's a Seed Plate you need.*



*All Dealers'.*

Seed Dry Plate Department,  
EASTMAN KODAK COMPANY,  
ROCHESTER, N. Y.

Enlargements will sell if they  
have the quality—they will  
have the quality if made on

# ARTURA CARBON BLACK

The paper that duplicates the  
tone, texture and contact qual-  
ity of the small print.



ARTURA DEPARTMENT,  
EASTMAN KODAK CO.,  
ROCHESTER, N. Y.

*All Dealers'.*



FROM AN ARTURA IRIS PRINT

*By Fred H. Reed  
Wichita, Kans.*



# STUDIO LIGHT

— INCORPORATING —

THE ARISTO EAGLE .. THE ARTURA BULLETIN

ESTABLISHED 1901

ESTABLISHED 1906

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No. 7

## THINGS WORTH KNOWING

It is easy for the photographer to follow a rut, to say he is only interested in straight photography and cares nothing about difficult work that occasionally comes to him. "Let the other fellow bother with it," is the easy way out, to be sure, but the photographer's ability is often measured by the difficult thing he does well, and business turned to him in this way more often than not sticks to him when other work is wanted.

For example, a professor of plant pathology had a number of specimens he wished photographed and the ordinary means failed to produce a satisfactory result. They were green leaves on which appeared reddish brown spots caused by some plant disease. The photographer had used ordinary plates and even orthochromatic plates and yellow filters and failed.

But he didn't give it up. He called for help and was quickly advised that a panchromatic plate and green filter would give the desired result, and so it did, as will be seen by our illustration.



The panchromatic plate is specially sensitive to red and green and as the green filter absorbed the

red and transmitted the green the red marks on the leaf photographed dark and the green body of the leaf light and full of detail. The result was perfectly satisfactory.

If it had been a red leaf with green markings exactly the same result would have been produced by using a red filter. The red filter absorbs blue and green and transmits red, so that with a plate sensitive to red (panchromatic) and a red filter, red objects photograph light, and blue and green objects dark.

Yellow filters are specially useful but not when it is desired to over correct green or red, that is, make green or red objects photograph lighter than they really are. Yellow light is a combination of green and red and absorbs blue. For this reason yellow filters are especially suitable for cloud rendering. The blue light is absorbed by the filter and as it doesn't reach the plate any blue sky in the picture is rendered much darker than the white clouds.

Yellow filters transmit their own color, so they are useful in photographing furniture. The yellow grain of the wood is rendered as light as it appears to the eye, but the plate used must be one that is sensitive to yellow. Yellow filters give good results on orthochromatic film or plates because they are sensitive to yellow and slightly to green.

A yellow filter and orthochromatic film or plate will not give a correct rendering of red. To photograph red as other than black the emulsion must be red sensitive. Yellow filters are very useful with panchromatic plates. They give the most generally satisfactory rendering of all colors when it is desired to have a number of colors in a single object appear in monochrome as they appear to the eye.

Of course a photographic plate cannot show color contrast, but it can show tone contrast and this the panchromatic plate will do perfectly with a K3 filter. If a light red object is photographed against a dark blue background the red will appear lighter than the blue, while if the blue and red are of the same strength they will photograph as the same shade of grey. A bright red against a dark green will likewise appear a light grey against a dark grey.

But this order can be reversed by using contrast filters and panchromatic plates. A red object against a green background of the same strength can be made lighter than its background if a red filter is used or darker than its background if a green filter is used.

Blue filters are seldom used because all plates are so much more sensitive to blue than to other colors that blue is as much over-corrected by using an ordi-





FROM AN ARTURA IRIS PRINT

*By Fred H. Reed  
Wichita, Kans.*



nary plate without a filter as red is over-corrected by using a panchromatic plate and a red filter.

Even panchromatic plates are super-sensitive to blue and require at least a light yellow filter such as the K 1 or K 2 for best general results or the K 3 for absolutely correct rendering of all colors.

With these things in mind it is quite simple to secure almost any result within reason by using panchromatic plates and filters. There is nothing difficult about such work and it is certainly gratifying to succeed where you have previously failed.

Panchromatic plates and filters are very useful in copying stained prints or in reproducing valuable stained negatives.

If a print has an objectionable yellow stain, no trace of the stain will be seen in a negative made through a filter of a yellow slightly darker than the stain. The same is true of a yellow stained negative from which it is impossible to secure a good print. Make a positive through a filter darker in color than the stain in the negative. The G filter, a dark yellow, is generally used for this purpose. If the stain is red, use a red filter—if green, use a green filter.

Our illustrations show a number of interesting comparisons of work on ordinary and panchromatic plates, with notes of the filters used. Try a piece of diffi-

cult work for yourself, using an ordinary plate, then a Wratten Panchromatic plate and the proper filter. You will find it so easy to secure good results that you will never be without Wratten Panchromatic Plates and Filters.



## OUR ILLUSTRATIONS

There is no lack of food, fighters or photographers in Kansas and, of the latter, Mr. Fred H. Reed of Wichita is one of those who are well known and universally liked. He has an excellent business, makes clean cut, bread and butter portraits that please the people and help to make photography popular.

Mr. Reed, with other equally broad minded photographers of Wichita, have a local photographic society, get together in the most friendly spirit of helpfulness to one another and, no doubt, profit by their friendly relations.

Mr. Reed is an excellent workman, uses only the best of materials and has found that the quality of work so produced is sufficiently appreciated to bring a price in proportion.

Our cover illustration as well as several of those on our inside pages are excellent examples of Mr. Reed's work.







FROM AN ARTURA IRIS PRINT

*By Fred H. Reed  
Wichita, Kans.*



## RETICULATION OR FRILLING OF NEGATIVES

The reticulation of the surface of negatives is often a source of trouble to photographic workers. The trouble is most likely to occur in hot weather and is generally produced after fixing, and either during or just subsequent to washing.

The wet gelatine emulsion becomes more or less finely wrinkled or corrugated, the network of puckers forming a pattern which generally extends over a part or all of the negative.

Reticulation sometimes occurs under certain conditions when intensifying with mercury, and also when negatives are placed in a close, warm room to dry. There is no remedy for reticulation once it has taken place, but the ounce of prevention will be obvious, once the phenomenon has been explained.

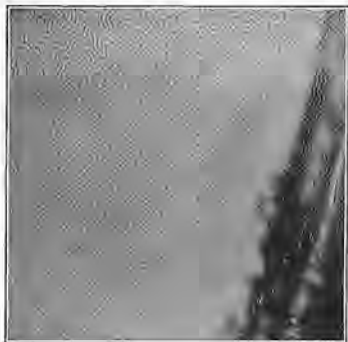


Fig. 1

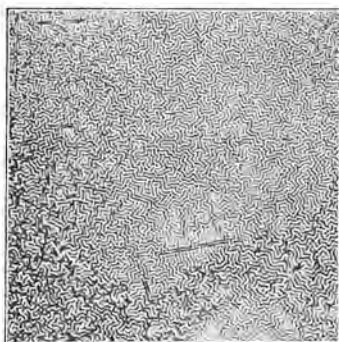


Fig. 2

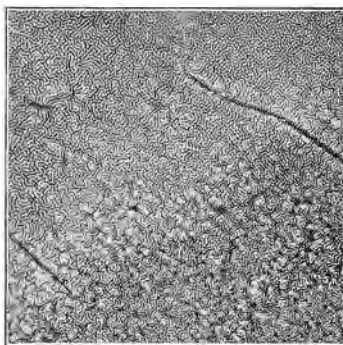
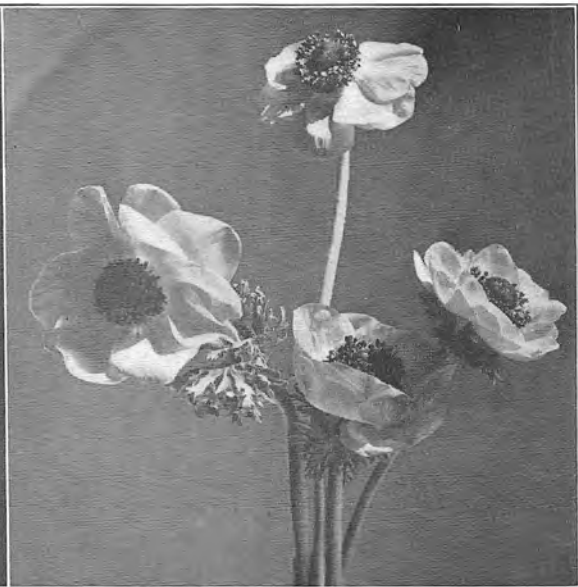
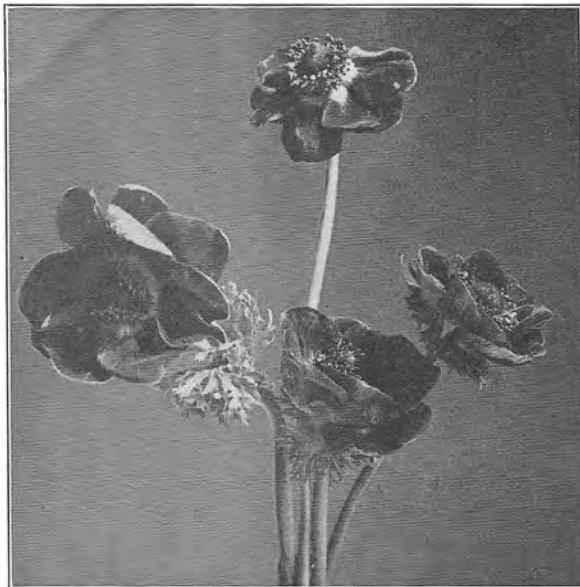


Fig. 3

As will be seen from the illustrations 1, 2 and 3, the grain of reticulation may vary considerably from very coarse down to very fine, and even microscopic dimensions. This reticulation is only slightly modified after drying. It will also be seen from the illustrations that reticulation on a developed plate causes the silver deposit to undergo a redistribution along with the reticulation



**BRIGHT RED POPPIES WITH BLACK CENTERS**

Orthochromatic Plate with filter.  
Result is poor because plate is not sensitive to red.

Wratten Panchromatic Plate without filter  
Result is good because this plate is so sensitive to red.

of the gelatine, the silver grains collecting in the raised portions and leaving the valleys or troughs between, fairly transparent.

The forming of a pattern or design by reticulation has been used in some photo-mechanical processes, such as the collotype, and for the production of irregular grained half-tone screens, but such processes are not of special interest to photographers.

An understanding of the conditions affecting and determining reticulation will be best understood if we first consider a few facts on the normal swelling and shrinking of photographic gelatine film, which takes place in its treatment and use.

There are two things to consider: the change of mass or bulk, and the change of shape. Any piece of gelatine placed in water within a temperature range of from 32° F. to 68° F., swells, at first, rapidly, then more slowly, and finally reaches a limit.

The limit of swelling depends upon the temperature, the character of the gelatine, and the presence of foreign substances in the water. Acid and alkali, in particular, have a great influence upon the swelling.

Gelatine should, theoretically, swell or shrink uniformly without change of shape, only altering its mass or bulk. This would be true if it could be dried very slowly so that drying would proceed at the same rate in all parts of the mass.

This is not possible in practice, however, as an emulsion placed on glass dries more rapidly on the surface than in the interior, producing stresses and distortion. The gelatine emulsion coated on a glass or film support is also firmly attached to it, so that one side is eliminated as regards drying.

The gelatine cannot spread off the plate so that its swelling or shrinkage is limited to one direction, viz., perpendicular to the plane of the support. Under normal conditions a gelatine film can be repeatedly swollen and dried without injury, but as the swelling parallel with the surface, which would remove the gelatine from the plate, is prevented by adhesion to a rigid support, the lateral strain must be compensated by the perpendicular swelling.

Suppose, however, that there is excessive swelling and shrinking, either successively or simultaneously, then the gelatine would be strained beyond its limit, causing either total or partial reaction. In the former case, the result would be that of frilling or the film entirely leaving its support, while in the latter, the strain not being uniform, we get a local puckering or folding. This is the common form of reticulation. The two effects are shown in Fig. 4, the shaded section representing the glass or film support.



## ORDINARY PLATE

The colors are incorrectly rendered



## PANCHROMATIC PLATE K3 FILTER

Notice the correct rendering of the entire design on each of the cards

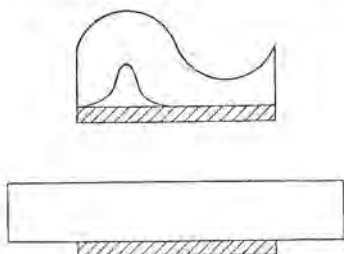


Fig. 4

The next thing is to determine the chemistry of the process which causes the excess swelling pressure and the localized arrest of this.

Reticulation was produced as follows: An ordinary plate was flashed, developed in a standard pyro-soda developer for 4 minutes at 80° F., then rinsed and fixed in a standard hypo-bisulphite fixing bath at 80° F. Reticulation was then found to depend upon the temperature of the wash water as follows:

Temperature	Reticulation
70° F.	None
80° F.	None
90° F.	Faint
100° F.	Strong

Instead of water, stronger and more definite results were obtained by an after-treatment with the following solution:

95% Ethyl Alcohol	. 50 c.c.
5% Formaldehyde	. 40 c.c.
Water	. . . 110 c.c.

In this case the following factors may have played a part:

- (1) Prehardened gelatine in the emulsion.
- (2) Tanning agents in the developer.
- (3) Excess swelling pressure in hot developer, etc., and particularly in washing.

That reticulation can be produced by the combined action of a swelling or softening agent, and a hardening or anti-swelling agent to restrain this, is shown by the production of reticulation by the following combinations:

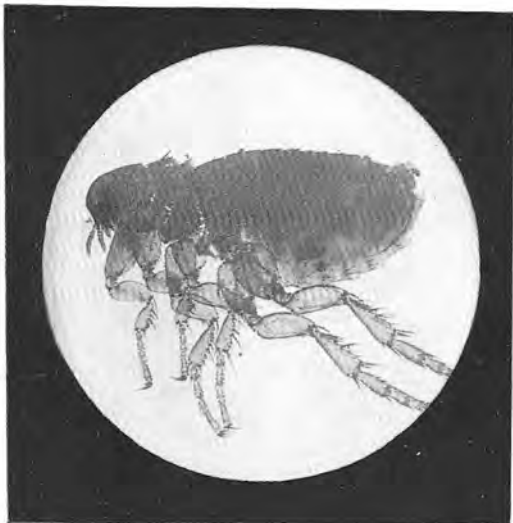
Hardening Agent	Softening Agent
(1) Tannic Acid	Acetic Acid
(2) Quinone	Acetic Acid
(3) Chromic Acid	Hot Water
(3) Mercuric Iodide	Potassium Iodide

All of these combinations produce reticulation.

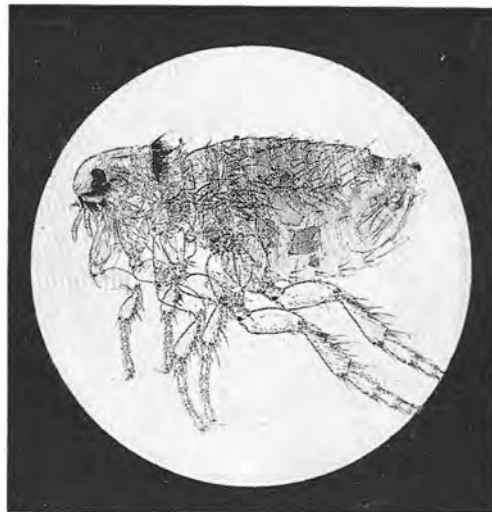
The conclusion to be drawn from these experiments, is that the most common form of reticulation is due to the tanning agents in the developer, and the hardening agents in the fixing bath not hardening the gelatine uniformly because of the presence of alkali or acid in connection with heat, all of which have a softening or swelling action. Consequently, some portions of the gelatine shrink, while other portions swell, and as there is not sufficient room for the swelled or puckered portions to dry down to the film's original thickness, ridges are formed with intervening valleys, making a distinct design.

The design in reticulation is much more apparent where there is a developed image, than in the





Ordinary plate without filter.  
The reddish brown body is too dark.



Panchromatic Plate and Red Filter.  
The over-correction of the red filter gives the  
desired result.

#### PHOTOMICROGRAPH OF A FLEA



Fig. 5



Fig. 6

more transparent parts of a negative. There is an apparent migration of the silver particles, making the ridges denser, while the valleys are less dense or quite clear. This is similar to the effect (a dark ring) produced when a drop of water is allowed to remain on a negative until it dries. The tension in drying softens the gelatine and forces the silver particles to the circular boundary of the spot.

It is quite possible that the action of some developers in producing grain in negatives is really a form of incipient reticulation. The original grain of the plate is coarsened in development by a clumping together of the original grains, which is noticeable and objectionable in enlarging. It is believed that nuclei are formed by the developed silver particles, which have a tendency to gather to them the finely divided reaction products of development which

have tanning or coagulating properties.

Considering the great change in the swelling of an emulsion in passing from an alkaline developer to an acid hypo, it is quite likely that any sub-microscopic reticulation would be further developed, and the grain of the silver image again coarsened. Further experiments are hoped to bring to light more information on this subject.

By adhering strictly to the use of the formulas recommended by the manufacturer, using fresh solutions, and keeping them cool, such troubles will be avoided and the best results always secured.

Figures 5 and 6 are photomicrographs of examples of reticulation. The illumination was vertical, the enlargement about sixty diameters.





By J. M. Belt. Standard Orthonon Plate.

## PHOTOGRAPHING THE SUN

On June 8 the attention of many people in this country was distracted from the war for a few minutes to contemplate the wonderful phenomenon occurring in the sky, this being the eclipse caused by the passage of the moon between the sun and the earth.

Eclipses in which the sun is partially obscured by the moon are fairly common, but it is rare for any portion of the earth to be visited by a total eclipse, in which the moon's disk completely covers that of the sun and for a few

minutes produces an artificial and temporary night.

The eclipse of June 8 was the first eclipse in this century to be total in the United States, and over the band of totality it naturally excited the greatest possible interest. This band of totality extended from the Pacific to the Atlantic coast but was only about sixty miles wide, so that for most of the country the eclipse was seen only as a partial covering of the sun's disk by that of the moon. The partial eclipse lasted for about two hours, but at some places in the east the sun set before the moon was clear of its disk.



Ordinary Plate

ANTIQUE CHEST OF DRAW

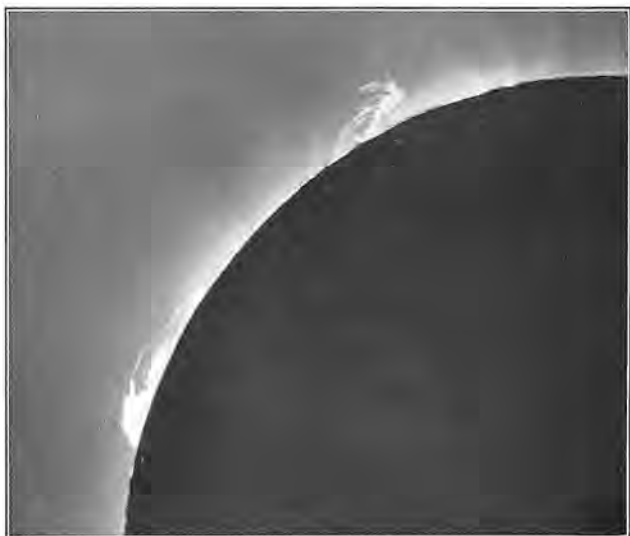
The English manufacturers of this furniture exported to the United States  
of their product, sold from g



Panchromatic Plate Red Filter

OF DRAWERS, MAHOGANY

United States in one year, before the war, a million and a half dollars worth  
sold from good photographs.



Courtesy of Professor E. B. Frost, Yerkes Observatory.

One of our readers had the happy thought of photographing the eclipse at intervals from the moment when the moon's disk was first seen touching that of the sun until the sun was hidden behind the trees of the horizon. He used an 8 x 10 camera and lens with a Standard Ortho-non plate, and gave eighteen exposures in all, one exposure being made every five minutes. The lens was closed to its smallest opening, the shutter set at  $\frac{1}{100}$ th of a second, and after seeing that the camera was rigidly set in its position, the shutter was snapped at five minute intervals. The photograph shows that at the

beginning this gave too much exposure so that some of the first exposures are buried in halation, and the reflection of the sun's image from the various surfaces of the lens has produced spots of light on the negative of the kind known to the opticians as "flare" spots. But as the sun sank lower in the atmosphere and its light began to be obscured by the absorption of the air, the exposure gave admirable results.

To the astronomers, a total eclipse offers a rare and valuable opportunity. From the sun there are continually shooting out flames of incandescent gas which cannot be seen because of the intense





Ordinary plate—note poor color rendering.



Panchromatic Plate, K3 Filter—the result is excellent.

RED TERRA COTTA TOBACCO JAR LINED WITH BLACK

The Griffins are yellow against a blue ground, the geometrical design is yellow, reddish brown and blue.

light of the sun itself, while around the sun there spreads out into space a wonderful phenomenon called the "corona," which is seen in an eclipse as a ring of pearly gray light, growing fainter and fainter as it recedes from the sun and spreading out into space on all sides. In order to photograph these phenomena a number of scientific expeditions went from the observatories to the belt in the country where the eclipse was total, and setting up temporary observatories with elaborate apparatus, they photographed the corona and the "prominences," as the flames of incandescent gas are called, and made measurements of the phenomena associated with the sun which can only be studied effectively when the sun's disk itself is eclipsed.

By courtesy of Professor Edwin B. Frost we are able to print a photograph showing a quarter of the circumference of the sun obscured by the moon's disk, projecting from the edge of which are seen two gigantic prominences. This was taken by the expedition from Yerkes Observatory, of which Professor Frost is the director. The uppermost prominence shown, looking like the skeleton of some prehistoric monster, projects no less than 47,000 miles from the surface of the sun, a distance nearly six times the diameter of the earth. The exposure for this

photograph, which was made by Miss Mary R. Culver, was twenty seconds, the sun being somewhat obscured by clouds. In addition to the prominence there is seen around the sun the light of the inner corona, this being the only portion which was bright enough to be recorded with the exposure given.

The astronomers are now busy studying the results which they have obtained, and drawing from them lessons which will in turn be used to plan new measurements to be made at the next eclipse.

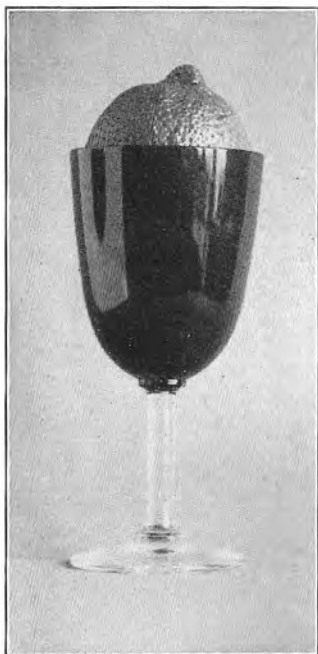


## A GENEROUS OFFER

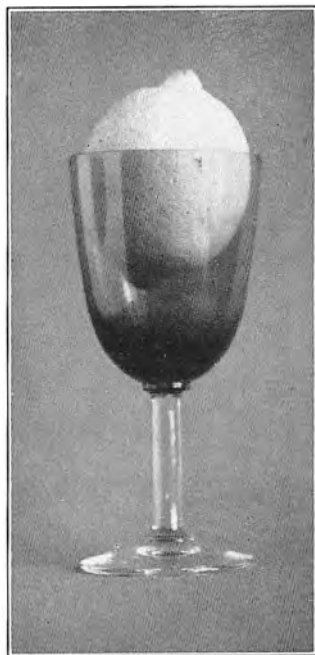
A great many photographers have gone into the service and left their studios in charge of their wives, and in a great many cases, no doubt, these women need advice and instruction.

W. S. Lively, known by most every one in the profession as the manager of The Southern School of Photography, has seen this opportunity of doing a big unselfish thing and has grasped it. He proposes to throw open the doors of his school to the wives of photographers who have entered the Government service, and will give them two weeks of absolutely free instruction.

A program which would ordinarily cover three months will be condensed into a two weeks course



Ordinary Plate



Wratten Panchromatic Plate  
and K3 Filter

LEMON IN GREEN GOBLET. BLUE-GRAY BACKGROUND

of intensive training that will be of inestimable value to the woman who has been left with a photographic business as her support.

The instruction will cover the making of negatives under the light, using both artificial and daylight, and the accompanying dark-room instruction. Most women who have seriously taken up such work have been successful and Mr. Lively expects to be able to make the photographers' wives who come to his school competent to take charge of their studios, make sittings and successfully conduct their studios during the absence of their husbands.

This offer is the loyal, unselfish contribution of a big hearted man whose only idea is to help win the war by making the wives of soldier photographers efficient and independent. Their husbands will be better soldiers, knowing their business is in good hands, and studio help, which is so hard to get, will be conserved.

The two weeks course will begin October 7th and those who wish to avail themselves of this opportunity should advise W. S. Lively, McMinnville, Tenn., so that arrangements may be made and accommodations secured.



*Watch the work of the man  
who uses*

**ARTURA**

## A PRECAUTION

The Acetic Acid Fixing Bath is the best fixing bath ever found for developing-out papers and it has been one of the most abused baths used because it would stand a lot of abuse.

It can not be expected that a substitute bath will stand the same abuse, though with reasonable care the Chrome Alum bath recommended in the June number of *STUDIO LIGHT* will work fully as well.

The precautions necessary with this bath are to have prints as free from developer as possible in order that no more alkali than necessary be carried into the fixing solution. Rinse prints quickly but very thoroughly after development, and when they are placed in the fixing solution, face up, see that they are kept moving and the fixing solution allowed to reach every portion of the print's surface during the first few minutes of fixing.

The Chrome Alum bath does not stop the action of the developer as quickly as the Acetic Acid bath, and if the above precautions are not taken—if prints matt together or air bells are allowed to form on their surface or if they are not continually covered with the solution, they will be stained, streaked or spotted.



Home on a furlough—the very chance you have wanted to get his portrait.

*Make an appointment  
for your sailor or  
soldier to-day.*



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PYRO STUDIO.

Line cut No. 255. Price, 30 cents.

**THE ONLY CONDITION**  
We make but one condition in our offer of cuts for the use of photographers.

It is obvious that two photographers in the same town would not care to use the same cut, and we are therefore obliged to limit this offer to one photographer in a town. It will be a case of first come first

served. The first order from a city will be promptly filled. Succeeding orders (if any) will necessarily be turned down and the remittance, of course, will be returned. It is also obvious that we cannot, on account of the cost of the drawings, furnish any large variety of cuts at the nominal prices quoted, and therefore can offer no substitute cut. Get your order in *first*.  
E. K. CO.

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*Write for Circular giving Complete Details.*

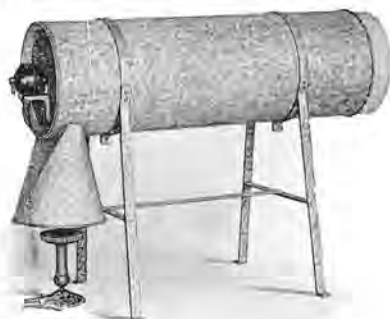
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ROCHESTER, N. Y.

Contest closes Nov. 1, 1918.



*Use an*

## IMPROVED MAJESTIC PRINT DRYER



Small initial cost—easy to operate—dependable and efficient—nothing to get out of order. A Majestic Print Dryer will enable you to turn out a big amount of work in a little time. The prints will dry thoroughly, properly shaped, in from fifteen to twenty minutes.

Improved Majestic Print Dryer No. 1, complete, with 2 drying rolls, electric motor, fan, gas heater and stand . . . . .	\$32.50
No. 4, complete, with 4 drying rolls . . . . .	65.00
No. 5, complete, with 5 drying rolls . . . . .	65.00

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Chemicals which are carefully tested and found to meet the exacting requirements of our manufacturing standards are stamped with our mark of approval and offered for your use.

To make sure of proper chemical results, specify E. K. Co. Tested when you order chemicals.



*Look for this seal on the container.*

EASTMAN KODAK COMPANY,

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*All Dealers'.*

## Core Plate Developing Racks



Develop your plates by the tank method in Core Plate Developing Racks.

The plate that is developed, fixed, washed and dried, untouched by hands, will become a clean negative. Clean negatives make clean prints and save time for the printer and finisher.

These racks are made of a metal that will not corrode nor disintegrate through the action of developing or fixing agents.

### THE PRICE

For $4\frac{1}{4} \times 6\frac{1}{2}$ plates, length of top bar, $8\frac{7}{8}$ inches	. \$ .60
For $5 \times 7$ plates, length of top bar, $9\frac{3}{8}$ inches	. .60
For $6\frac{1}{2} \times 8\frac{1}{2}$ plates, length of top bar, $10\frac{7}{8}$ inches	. .75
For $8 \times 10$ plates, length of top bar, $12\frac{3}{8}$ inches	. .75

**EASTMAN KODAK COMPANY,**

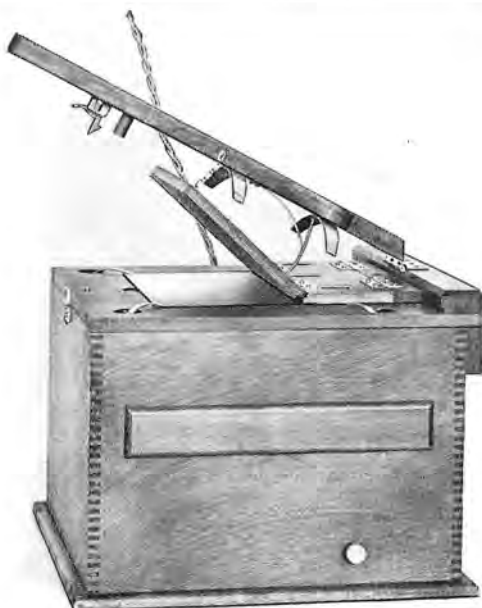
ROCHESTER, N. Y.

*All Dealers'.*

*Saves  
light*

*Saves  
labor*

*Saves  
time*



## The No. 1 Eastman Printer

A thoroughly practical, convenient and economical professional printer for 5 x 7 and smaller size negatives.

The printer is operated by hand, burns two 60 Watt lamps, has automatic switch, lamp adjustments, red light and slide for ground glass. The printing opening is 8 x 8 inches; the box is strong and substantial.

The price with red lamp, electric cord and plug to  
fit any ordinary electric socket . . . . . \$10.00

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**ROCHESTER, N. Y.**

*All Dealers'.*

You have better arguments to-day than ever before for the sale of Portrait Albums—and more prospective customers.



## EASTMAN PORTRAIT ALBUMS

Will keep the soldiers' portraits as they should be kept, and when the boys come home, there will be room for the picture record they will make of the war and its friendships.

Have albums in stock, show them, sell them and you will make more business for yourself. And besides, there is a good profit for you on album sales.

EASTMAN KODAK COMPANY,

ROCHESTER, N. Y.

*All Dealers'.*

# TOZOL

*The Complete Developer for  
Photographic Papers.*

We recommended Tozol before the war.

It's the same to-day, it is the logical developer for Artura, Azo and Velox papers, and your dealer can supply you.

The genuine is always better than the best substitute.

## THE PRICE

1 oz. bottle . . . . .	\$ .85
$\frac{1}{4}$ lb. bottle . . . . .	3.15
$\frac{1}{2}$ lb. bottle . . . . .	6.15
1 lb. bottle . . . . .	12.00

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ROCHESTER, N. Y.

*All Dealers'.*

## F. & S. Commercial Camera



Provided with every adjustment essential for Commercial Photography. The great bellows capacity permits the use of lenses with extreme variation in focal length.

The lens board moves independently of the rectangular bellows, providing extreme raising and lowering of the lens without cutting into the image.

The double swing back is reversible, and operated by a quick acting screw.

The bed is divided into four interchangeable sections, and the focus may be controlled by either front or back rack and pinion.

Focal capacity, 8 x 10, 42 inches; 11 x 14, 54 inches.

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Eastman Kodak Company

ROCHESTER, N. Y.



## OUR NEW COMBINATION MOUNTER

*The Duplex Group*

'Tis an artist proof style with inserts—inserts hold 3 x 4 prints in the A size; 4 x 6 in the B size—or inserts can be taken out and you then have an Artist Proof Group Style for 4 x 6 prints in the A size; 5 x 8 in the B size. *New—practical.*

Swiss Neutral Grey color—suitable for all tones for 2, 3 or 4 combination.

**Priced from 15 to 35 cents each.**

*Be sure to have your Stock House representative show you samples—'tis a style you need.*

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